

What is claimed is:

1 1. An adaptive filter to suppress repetitive
2 high-frequency information in an image comprising
3 pixels, the image having repetitive high-frequency
4 information, comprising:

5 decision circuitry to identify the repetitive
6 high-frequency information in at least a subset of the
7 pixels of the image to provide a repetitive-sequence
8 signal;

9 a low-pass filter to filter the image to produce
10 low-pass filtered pixels; and

11 a switch to output the pixels of the image as
12 adaptive-filter output, and in response to the
13 repetitive-sequence signal, to output the low-pass
14 filtered pixels as the adaptive-filter output.

1 2. The adaptive filter of claim 1 wherein the
2 low-pass filter filters the pixels of the image by
3 averaging a predetermined number of pixels.

1 3. The adaptive filter of claim 1 wherein the
2 decision circuitry disables the repetitive-sequence
3 signal at the beginning of a scan line.

1 4. The adaptive filter of claim 1 wherein a
2 transition has a sign, and a transition is indicated
3 when a difference in luminance between two pixels
4 exceeds a predetermined transition value and that
5 difference has a sign that is different from the sign
6 of a previous transition value, and the decision
7 circuitry identifies a repetitive sequence when at

8 least a predetermined number transitions occur in a
9 sequence of pixels having a predetermined number of
10 pixels.

1 5. The adaptive filter of claim 1, wherein a
2 transition has a sign, and a transition is indicated
3 when a difference in luminance between two adjacent
4 pixels exceeds a predetermined transition value and a
5 sign of that difference is different from the sign of a
6 previous transition value, and a sequence of pixels is
7 associated with a respective sequence of transitions,
8 the sequence of transitions having a predetermined
9 number of zones, and the decision circuitry activates
10 the repetitive-sequence signal when each zone has one
11 or more transitions.

1 6. The adaptive filter of claim 5 wherein the
2 decision circuitry deactivates the repetitive-sequence
3 signal when one or more zones have no transitions.

1 7. The adaptive filter of claim 1 wherein the image
2 is a video image.

1 8. A video transmitter system comprising:
2 an adaptive filter to suppress at least a
3 portion of repetitive high-frequency information from a
4 video signal to provide an adaptive-filter video
5 signal;
6 a compression engine to compress the
7 adaptive-filter video signal to provide a compressed
8 video signal; and

9 a network interface to transmit the
10 compressed video signal over a transmission medium.

1 9. The video transmitter system of claim 8 wherein
2 the adaptive filter comprises:

3 decision circuitry to identify the repetitive
4 high-frequency information in the video signal to
5 provide a repetitive-sequence signal;

6 a low-pass filter to filter the video signal to
7 produce a low-pass filtered video signal; and

8 a switch to output the video signal as the
9 adaptive filter video signal, and in response to the
10 repetitive-sequence signal, to output the low-pass
11 filtered video signal as the adaptive-filter video
12 signal.

1 10. The video transmitter system of claim 9 wherein
2 the video signal is a digital video signal comprising
3 pixel values, and the low-pass filter filters the
4 digital video signal by averaging a first predetermined
5 number of pixel values.

1 11. The video transmitter system of claim 9 wherein
2 the decision circuitry is reset to disable the
3 repetitive-sequence signal at the beginning of each
4 scan line.

1 12. The video transmitter system of claim 9 wherein a
2 transition has a sign, and the decision circuitry
3 indicates a transition when a difference in luminance
4 between two pixels exceeds a predetermined transition
5 value and the sign of that difference is different from

6 the sign of a previous transition, and activates the
7 repetitive-sequence signal when at least a
8 predetermined number of transitions occur in a sequence
9 of pixels having a predetermined number of pixels.

1 13. A method for suppressing repetitive high-frequency
2 information in a video image having repetitive
3 high-frequency information, the video image having
4 pixels represented as video image data, comprising:

5 identifying repetitive high-frequency
6 information in the video image data;

7 low-pass filtering the video image data to
8 produce low-pass filtered video image data; and

9 when the repetitive high-frequency
10 information is identified, outputting the low-pass
11 filtered video image data as adaptive-filter image
12 data, otherwise outputting the unmodified video image
13 data as the adaptive-filter image data.

1 14. The method of claim 13 wherein the video image
2 data comprises grayscale values; and wherein said
3 low-pass filtering averages a subset of the grayscale
4 values to produce at least a subset of the adaptive
5 filter image data.

1 15. The method of claim 13 wherein the video image
2 data is color video data having an luminance component
3 and a color component; and wherein said low-pass
4 filtering modifies a subset of luminance components to
5 produce at least a subset of the adaptive-filter image
6 data.

1 16. The method of claim 13 wherein said identifying
2 identifies repetitive high-frequency information in the
3 video image when a difference in luminance between two
4 pixels is greater than or equal to a predetermined
5 threshold for a predetermined number of pixels.

1 17. The method of claim 13 wherein said identifying
2 identifies non-repetitive information, and further
3 comprising:

4 passing the video image data when repetitive
5 high-frequency information is not identified.

1 18. The method of claim 13 wherein a transition has a
2 sign and said identifying identifies a transition when
3 a difference in luminance between two pixels exceeds a
4 predetermined transition value and the sign of that
5 difference is different from the sign of a previous
6 transition, and identifies a repetitive sequence when
7 at least a predetermined number transitions occur in a
8 sequence of pixels having a predetermined number of
9 pixels.

1 19. The method of claim 13 wherein a transition has a
2 sign, and said identifying identifies a transition a
3 difference in luminance between two adjacent pixels
4 exceeds a predetermined transition value and a sign of
5 that difference is different from a sign of a previous
6 transition, and a sequence of pixels is associated with
7 a respective sequence of transitions, the sequence of
8 transitions having a predetermined number of zones, and
9 said identifying identifies the high-frequency

10 repetitive information when each zone has one or more
11 transitions.

1 20. The method of claim 19 wherein said identifying
2 does not identify repetitive high-frequency information
3 when one or more zones have no transitions.

1 21. An adaptive filter to suppress repetitive
2 high-frequency information in an image comprising
3 pixels, the image having repetitive high-frequency
4 information, comprising:

5 means for identifying the repetitive
6 high-frequency information in at least a subset of the
7 pixels of the image to provide a repetitive-sequence
8 signal;

9 means for filtering the image to produce
10 low-pass filtered pixels; and

11 means for outputting the pixels of the image
12 as adaptive-filter output, and in response to the
13 repetitive-sequence signal, outputting the low-pass
14 filtered pixels as the adaptive-filter output.

1 22. The adaptive filter of claim 21 wherein the means
2 for filtering filters the pixels of the image by
3 averaging a predetermined number of pixels.

1 23. The adaptive filter of claim 21 wherein the means
2 for identifying disables the repetitive-sequence signal
3 at the beginning of a scan line.

1 24. The adaptive filter of claim 21 wherein a
2 transition has a sign, and the means for identifying

3 indicates a transition when a difference in luminance
4 between two pixels exceeds a predetermined transition
5 value and a sign of that difference is different from a
6 sign of a previous transition, and the means for
7 identifying identifies a repetitive sequence when at
8 least a predetermined number transitions occur in a
9 sequence of pixels having a predetermined number of
10 pixels.

1 25. The adaptive filter of claim 21, wherein a
2 transition has a sign, and the means for identifying
3 indicates a transition when a difference in luminance
4 between two adjacent pixels exceeds a predetermined
5 transition value and a sign of that difference is
6 different from a sign of a previous transition, and a
7 sequence of pixels is associated with a respective
8 sequence of transitions, the sequence of transitions
9 having a predetermined number of zones, and the
10 decision circuitry activates the repetitive-sequence
11 signal when each zone has one or more transitions.

1 26. The adaptive filter of claim 25 wherein the means
2 for identifying deactivates the repetitive-sequence
3 signal when one or more zones have no transitions.

1 27. The adaptive filter of claim 21 wherein the image
2 is a video image.